

Dauphin Lake

Summary Report 2025



Table of Contents

Introduction.....	3
Types of Fisheries	4
Stock Assessment	5
Walleye.....	6
Northern Pike	12
Conclusion	13
References.....	14

Dauphin Lake 2025 Stock Assessment Summary Report

Introduction

Fisheries Branch staff from Manitoba's Natural Resources and Indigenous Futures Department conduct annual fish stock assessments on Dauphin Lake. This report includes results from the stock assessment completed in 2025. An index gillnetting program, (North American Standard protocol) is conducted annually (August) on Dauphin Lake to provide an updated assessment on the species composition and to evaluate the success of walleye (*Sander vitreus*) recruitment in the lake. Each gillnet is 25m in length with mesh sizes ranging from 38mm to 127mm (1.5" to 5"). Individual fish length, weight, and age metrics were collected from walleye and northern pike (*Esox lucius*) caught in the nets, while all other species were counted and bulk weighed. Walleye was the most abundant species caught in the gill nets followed by shorthead redhorse (*Moxostoma macrolepidotum*), and yellow perch (*Perca flavescens*). Data analysis conducted includes catch-per-unit-effort (CPUE), relative abundance, age frequencies, and a variety of other population health metrics.

Location

Dauphin Lake is located to the south of Lake Winnipegosis and to the west of Lake Manitoba in the province of Manitoba (see *Figure 1*).

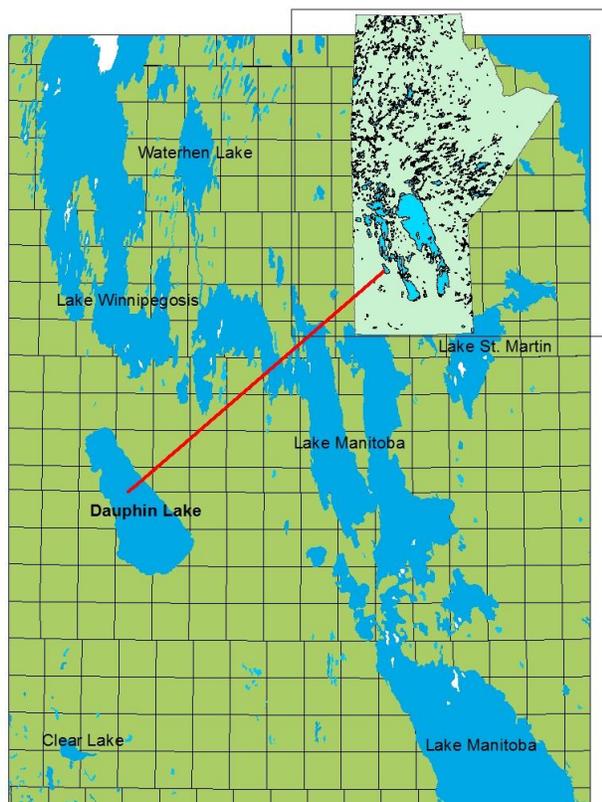


Figure 1: Map of location of Dauphin Lake.

Dauphin Lake is 520 km², approximately 42 kilometres long and 12 kilometres wide, with water depths of up to 4m. Dauphin Lake drains into Lake Winnipegosis through the Mossy River.

Types of Fisheries

Dauphin Lake is classified as a multi-use fishery consisting of Indigenous domestic harvest, commercial gill netting, and recreational angling. Indigenous domestic harvest and recreational angling are the main fishing activities occurring on Dauphin Lake.

1. Indigenous Domestic/Sustenance Fishing

Domestic harvest by Indigenous communities in the area occurs throughout the year by gill net as well as by rod and reel during the spring spawning window. In the exercise of Aboriginal or Treaty rights, individuals may fish for food during the spawn period by angling (rod and reel) only. The restrictive gear type measure was first implemented in 2014. Manitoba Fisheries Branch encourages voluntary harvest restraint by releasing spawning fish (over 48cm).

2. Commercial Fishery

Dauphin Lake has a single species winter commercial fishery in which 6,804 kgs (15,000 lbs) of walleye (*Sander vitreus*) may be harvested. All non-quota species may be harvested without restriction including lake whitefish (*Coregonus clupeaformis*); northern pike (*Esox lucius*); yellow perch (*Perca flavescens*); sauger (*Sander canadensis*); white sucker (*Catostomus commersoni*), and shorthead redhorse (*Moxostoma macrolepidotum*), marketed as “mullet”; cisco (*Coregonus artedi*), marketed as “tullibee”; and common carp (*Cyprinus carpio*).

3. Recreational Angling

Recreational fishing also occurs in the area but is predominantly confined to the tributaries and the mouths of the Valley River, Wilson River, Ochre River, and Turtle River, with winter ice fishing being the primary fishing season of resource users. All walleye over 48cm must be released. All inflowing tributaries and those parts of Dauphin Lake within 1km of their mouths, are closed to all fishing, including dip netting from March 1st to the second Friday in May. The remaining parts of Dauphin Lake remain open in March and are closed to all fishing from April 1st to and including the second Friday in May.

Stock Assessment

The Manitoba Department of Natural Resources and Indigenous Futures (Fisheries Branch) conduct annual index gill net surveys to assess the status of walleye and other fish stocks in Dauphin Lake. Figure 2 shows the catch composition from index gill net surveys in 2013-2025. Walleye were the dominant species in the catch in all years, with a slight decrease in percent composition of the catch from 2024 to 2025.

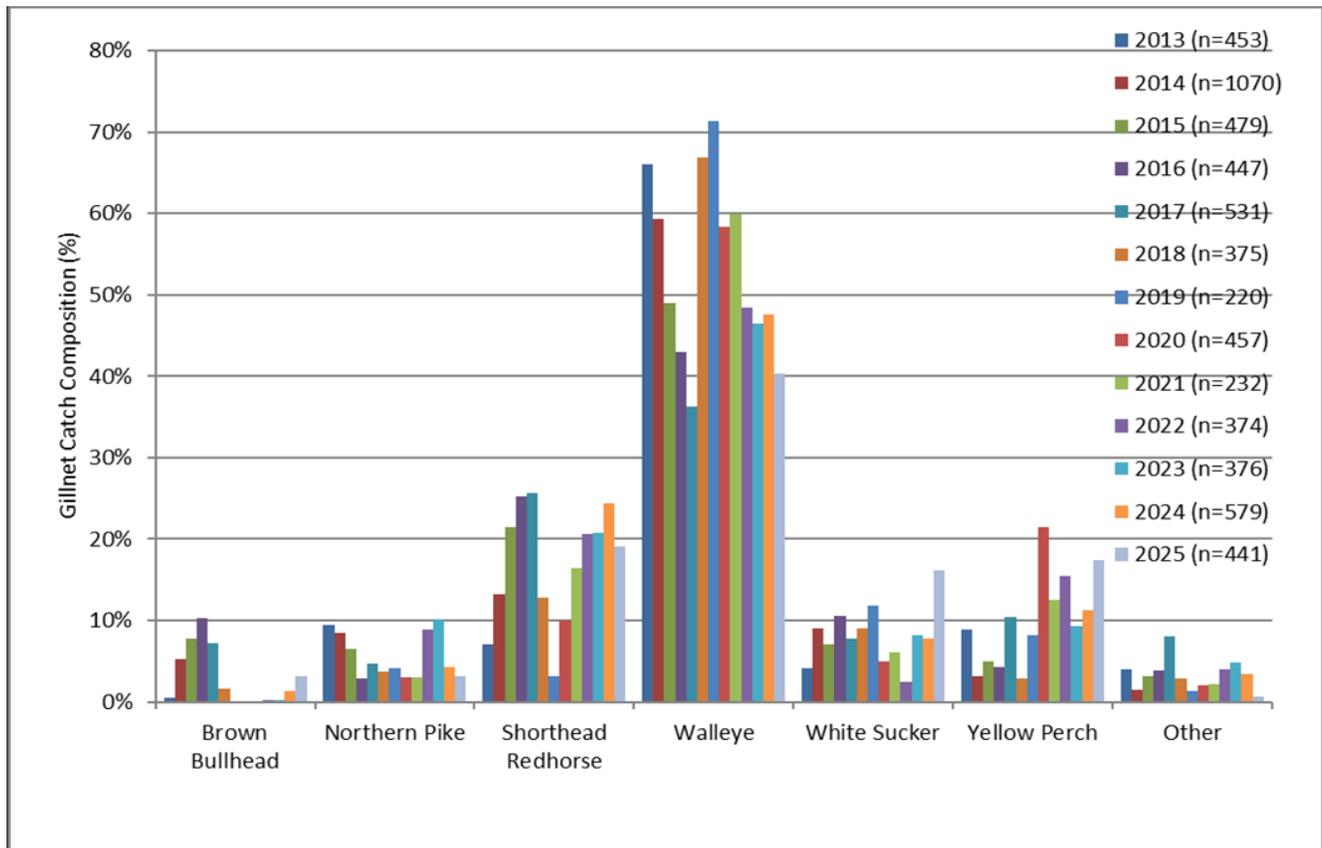


Figure 2: Catch composition of species from index gill net surveys from 2013 to 2025.

Walleye

Relative abundance of all walleye from index netting generally exhibited an increasing trend since the mid 1990s but has shown occasional declines based on variable recruitment and harvest rates over the years (Figure 3a and 3b).

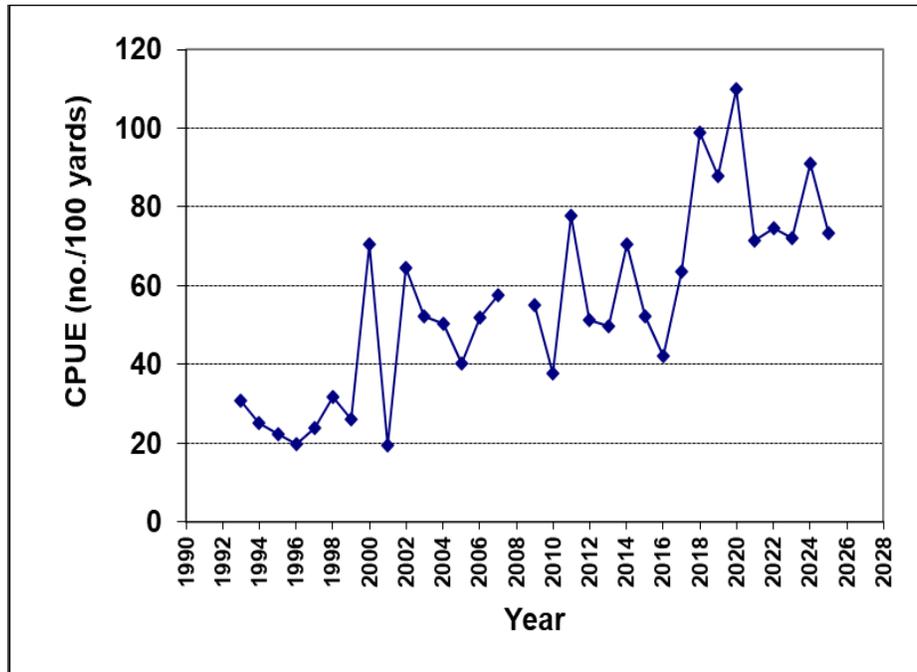


Figure 3a: Catch-per-unit-effort of all walleye caught during annual monitoring, 1993 to 2025.

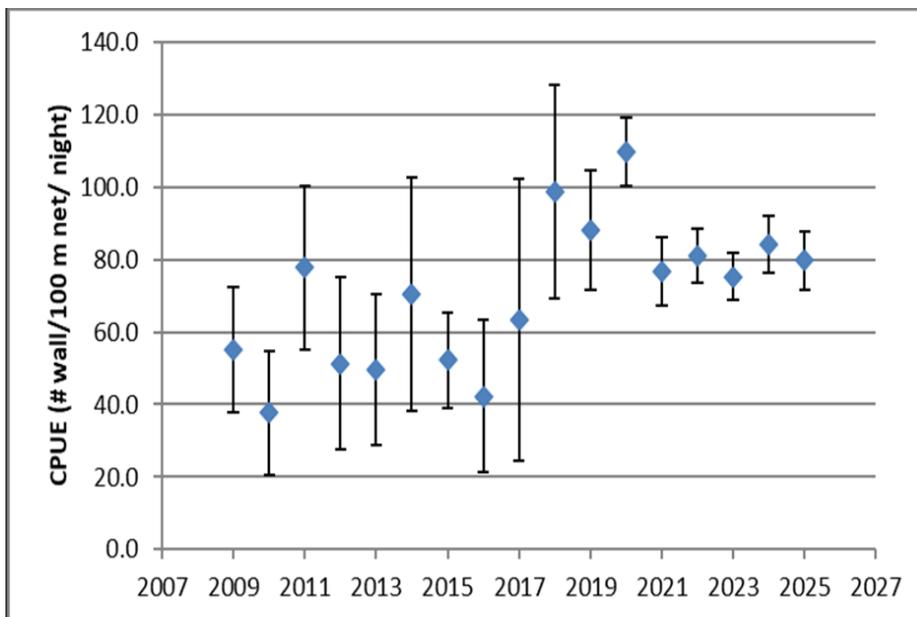


Figure 3b: Catch-per-unit-effort of all walleye caught during annual monitoring and associated variation in catch, 2009 to 2025.

A wide variety of age classes with variable abundance were found from ageing 177 walleye caught sampled from the Index netting programme in 2025 (Figure 4). A total of 18 age groups were caught, ranging from 1 to 19 years. The strong 2022 age class (age 3) was the most abundant in the sample (31.6%). The number of age groups in the walleye population in Dauphin Lake (more than 8 age classes) is one indicator of a stable stock (Sullivan 2003).

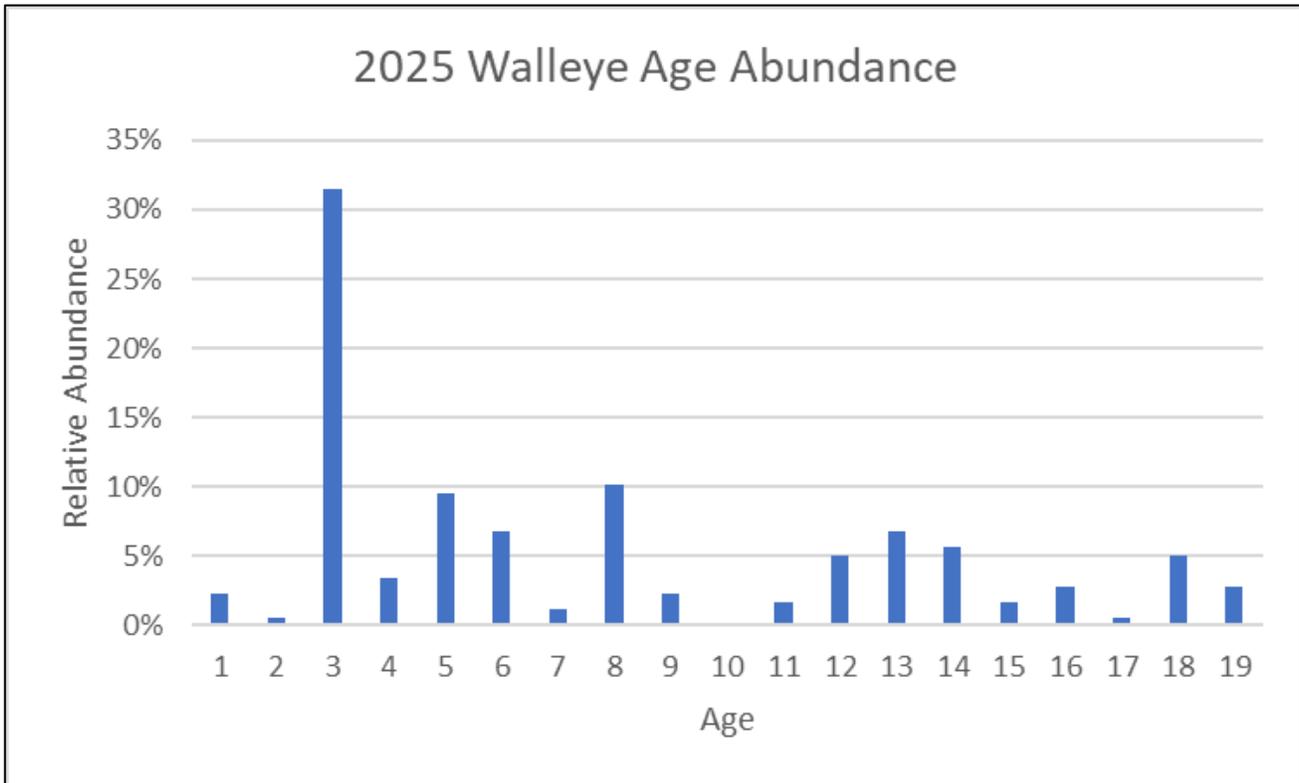


Figure 4. Relative abundance of walleye age classes from the 2025 index gillnet survey.

In 2025, the mean age of walleye captured in the stock monitoring program decreased slightly from 7.47 (in 2024) to 7.37 years of age. A mean age between six to nine years is an indicator of a stable population, in combination with other positive stock status indicators (Sullivan 2003). Reproductive rate of walleye populations increases with the mean age of adult female walleye, in part because older female walleye produce larger and potentially higher quality eggs (Venturelli et al. 2010). In 2025, the mean age of mature female walleye was 9.96 years old (Figure 5).

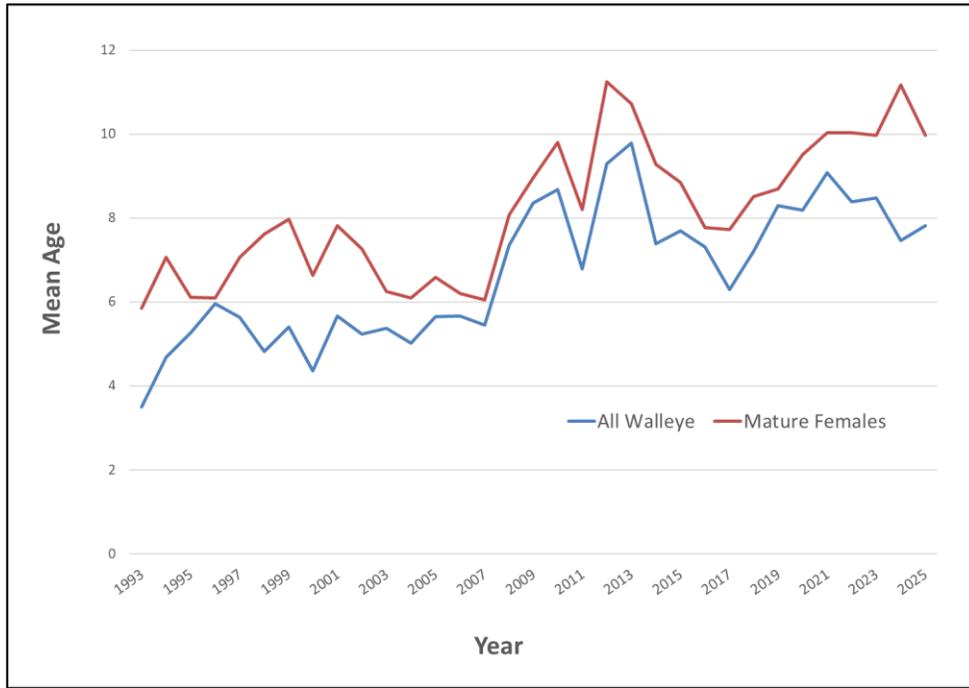


Figure 5: Mean age of walleye (sexes combined and mature females only) from 1993 to 2025. Mature female walleye ranging in age from 3 to 19 represented 33.3% of all walleye caught in the 2025 assessment. This suggests a high proportion of females that are likely to spawn in the Dauphin Lake walleye population, which is important for recruitment potential, but may increase the rate of cannibalism which could lead to recruitment impairment. Stock-recruitment modelling for the Dauphin Lake walleye population from 1990 to present suggests that density dependant mortality may be occurring (Figure 6).

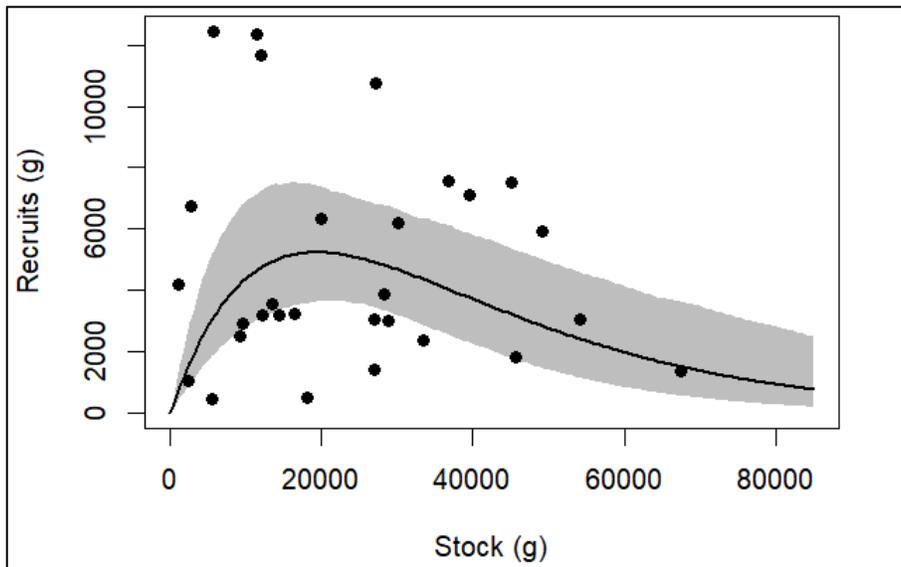


Figure 6. Ricker spawner-recruit relationship for Dauphin Lake walleye for spawners from the years 1988 to 2021. Stock is in grams of mature female biomass caught in the index netting program and corrected for maturity rates in the spring. Recruits is represented as the total grams of five year-old fish in the index program from the corresponding year class calculated as the geometric mean of that year class as four, five, and six year olds. The line is the line of best fit with multiplicative error, and the shaded area is the 95% confidence interval.

Biologically, mature female fish are considered to be more important than mature male fish for the production of future year classes. In the Valley River, larval walleye abundance was positively related to mature female biomass in Dauphin Lake (Johnston et al. 1995). The relative abundance of mature female walleye decreased from 37 fish per 100 yards of net in 2024 to 24 fish per 100 yards of net in 2025 (Figure 7). The relative abundance of immature female walleye in the population increased from 14 fish per 100 yards of net in 2024 to 20 fish per 100 yards of net in 2025.

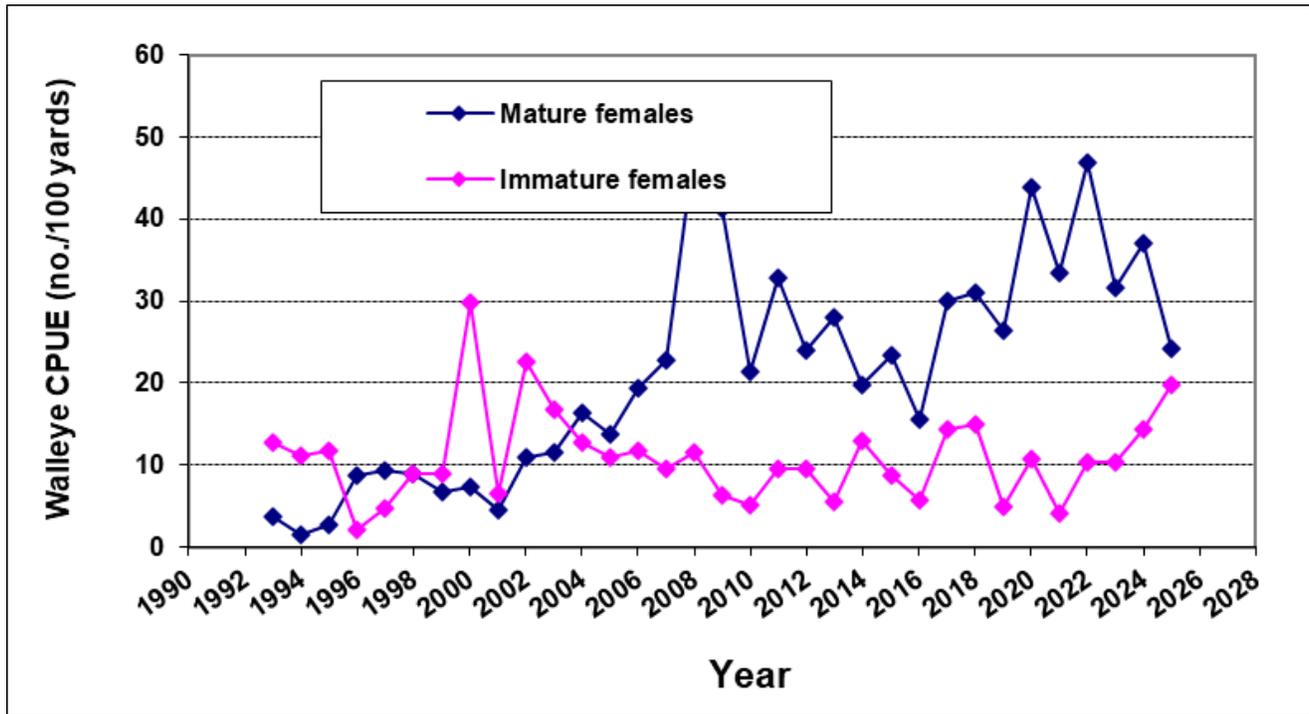


Figure 7: Catch-per-unit-effort of mature and immature female walleye caught during annual monitoring 1993 to 2025.

The age-at-maturity of walleye generally decreased after 2006 (Figure 8). Female age-at-maturity in 2025 (5.62 years) was up from 2024 (5.05 years). Age-at-maturity is influenced by the strength of year classes ages 4 and 5. In 2025, age-at-maturity of female walleye (5.62 years) was above the published threshold of 5.1 years, based on growing season length (Gangl and Pereira 2003). Failing to exceed a threshold of a biological performance indicator is considered a negative indicator of stock status.

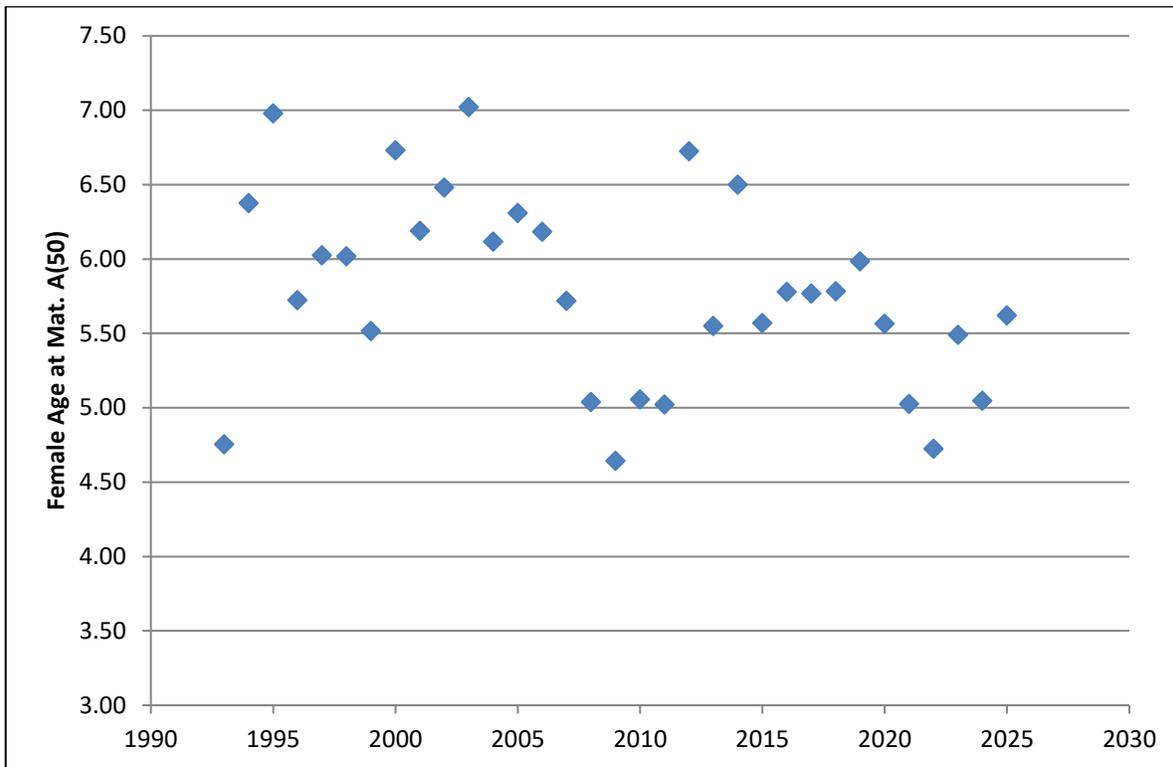


Figure 8: Age of maturity of walleye from annual monitoring in Dauphin Lake, 1993 to 2025. Utilizing the strong 2007-cohort and following over time get an estimate of annual mortality resulted in a mortality rate for female walleye of 20% (Figure 9). Cohort-based mortality seemed to be a better estimate that takes the variable recruitment factor out of the equation. This mortality rate is within recently published sustainable exploitation rates (Lester et al. 2014).

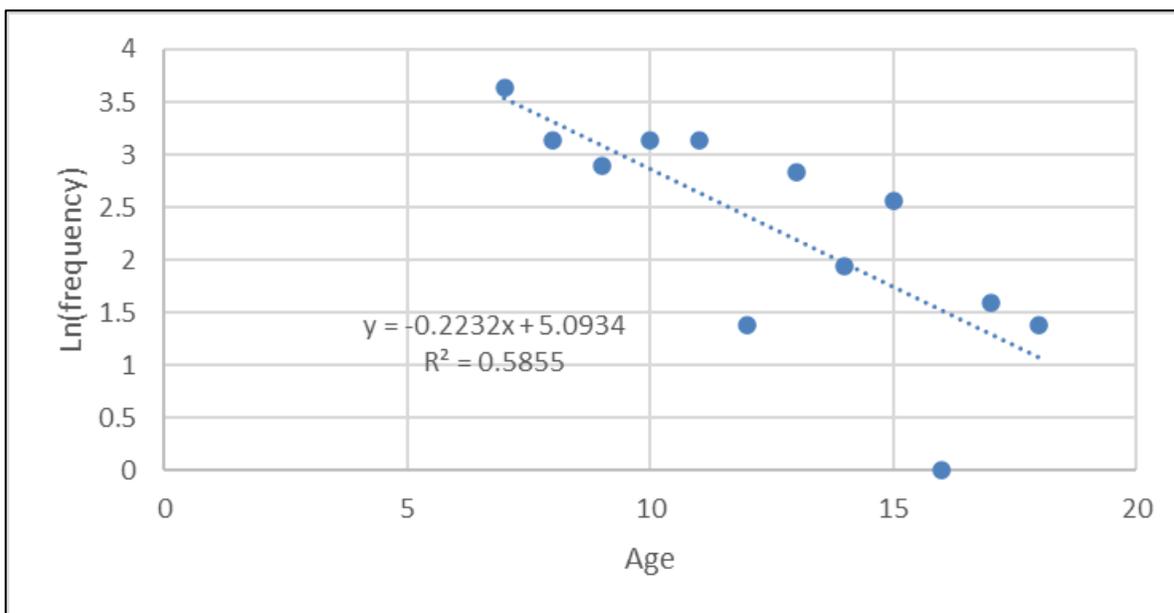


Figure 9: Total mortality rate of 2007-year-class of walleye from Dauphin Lake.

The Von Bertalanffy growth function for 2025 shows that young walleye grow quickly and reach a maximum total length around age 8 with some individuals continuing to grow (Figure 10). It is presumed then that given higher walleye populations that growth is being stunted by physiological compensation functions. This has left a disproportionately large percentage of the fish at the lower end of the slot and few fish that grow to a large size (>55cm) in recent years.

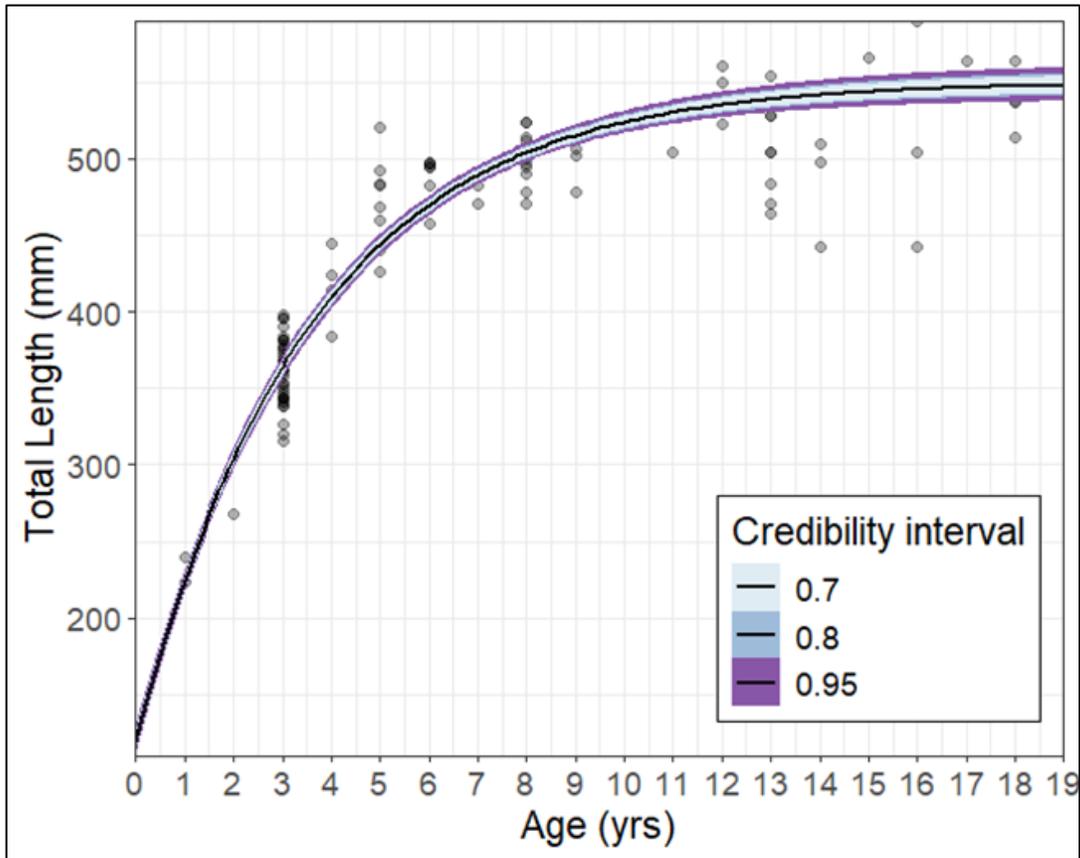


Figure 10: Von Bertalanffy growth function of walleye age at total length from Dauphin Lake, 2025.

Northern Pike

Near-shore and vegetated habitat areas were too shallow to effectively gillnet, which is where pike are typically found. In the far-shore areas assessed, a low level of northern pike abundance with relatively low uniform age structure was found (Figure 11). A total of 14 northern pike consisting of 4 age groups were caught and aged during 2025, ranging in age from 2 to 6 years. Due to the low composition of pike stocks, no specific measures are in place to manage the species.

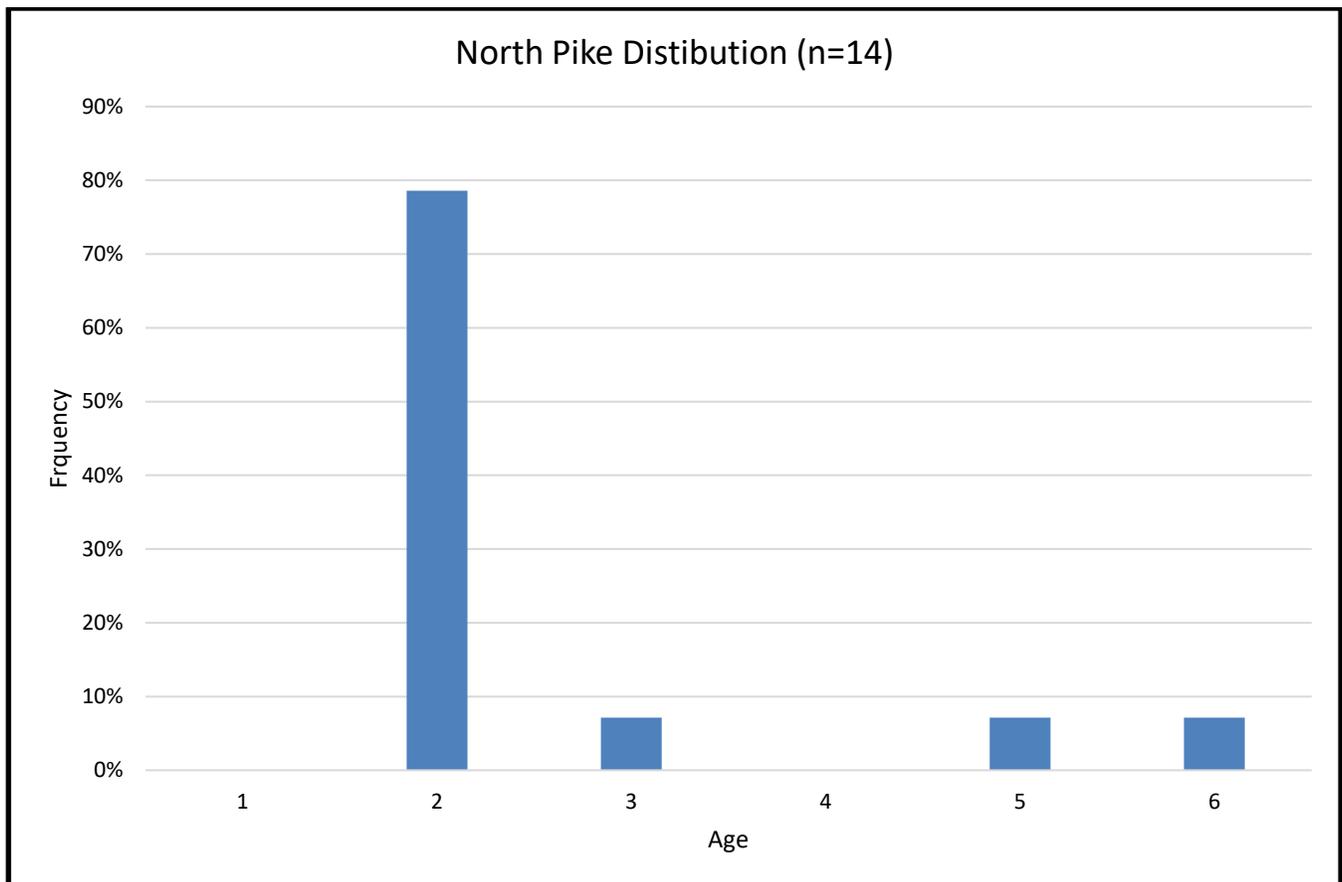


Figure 11. Relative abundance of pike age classes from index gillnet survey from 2025.

Conclusion

There are several indicators used to determine the status and health of fish stocks in provincial waters. These include, but are not restricted to, age structure (i.e., variation in year class strength, mean age), mortality rates, mean age of the commercial catch, age of maturity, and catch per unit effort.

Based on 2025 index netting results, the population was composed of a wide range of age groups (18), similar to the last five years, which is an indicator of stable stock status. There is a broad range of spawning aged females in the Dauphin Lake walleye population that support sufficient walleye recruitment and provide for long-term sustainability.

Catch per unit effort (CPUE) has been at a high level in recent years. The number of mature female walleye decreased in 2025 with 24 fish per 100 yards of net from 2024 (37 fish per 100 yards of net). To ensure accurate and up-to-date information is collected, Manitoba Natural Resources and Indigenous Futures will continue to refine approaches to enhance monitoring activities.

The Department will continue to undertake annual stock monitoring activities on Dauphin Lake and continue to explore opportunities to enhance assessment efforts. This may include index gill netting, beach seining for age-0 walleye monitoring, and spring spawning monitoring activities.

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